

Title: Do These Systems Meet Your Expectations

Brief Overview:

This concept development unit is designed to develop the topic of systems of equations. Students will be able to graph systems of equations to discover the three possible cases: intersecting, parallel or coinciding lines. Students will be able to identify how many solutions each system has by looking at the graphs. Before this unit is taught students will have learned about slope, intercepts, and how to graph linear equations. After this lesson, students will move on to solving systems of linear equations by substitution and linear combination methods.

NCTM Content Standard/National Science Education Standard:

- Use symbolic algebra to represent and explain mathematical relationships
- Be able to represent and analyze mathematical situations and structures using algebraic symbols
- Be able to use mathematical models to represent given real world situations
- Be able to build new mathematical knowledge through problem solving
- Be able to solve problems that arise in real world situations

Grade/Level:

Grades 9 – 12, Academic Algebra I

Duration/Length:

Three 50-minute lessons.

Student Outcomes:

Students will:

- Successfully graph linear equations.
- State whether lines are intersecting, parallel or coinciding.
- Determine the number of solutions that occur in the system of equations.
- Write equations given real world scenarios.
- Analyze and compare different scenarios in order to determine the solutions to the problem presented.

Materials and Resources:

- Transparencies
- Graph paper
- Colored pencils
- Colored paper
- Poster paper
- Markers
- Colored index cards
- Worksheets
 - Carnies in the Curriculum Drill
 - Graphing Lines foldable
 - Solving Systems of Linear Equations
 - Let's Meet at the Carnival
 - Interception!
 - Inside and Out activity
 - Systems with Tables
 - Systems with Tables and Graphs
 - Gallery Walk
 - Graphing Linear Equations Assessment

Development/Procedures:

Lesson 1 Pre-assessment – Use the drill, “Carnies in the Curriculum,” as a pre-assessment by asking students for the equations they wrote. Use those equations to have the students move to different corners of the room for the different equations that were given.

Launch – Begin the lesson by projecting “Carnies in the Curriculum” on the overhead. The students will write the algebraic equations to represent a situation.

Teacher Facilitation – Monitor the students as they work. If the majority of the class is unsuccessful, the students will make the “Graphing Lines” foldable on graphing linear equations. Foldables will include how to graph using slope–intercept form, a table, and the x – and y –intercepts. The students can use this as a reference throughout the unit. Note that creating this foldable will cause the unit to take an extra day.

If the class is successful on the drill and does not need to create the foldable, they will move on to beginning the concept development unit. Use the drill problems to begin a discussion of the terms parallel and intersecting lines.

Incorporate the word solution in your discussion. Discuss how tables can help graph a linear equation. Introduce the system of equations shown, and have the students graph them on the same coordinate plane. Use the equation below to introduce coinciding lines. Ask students to discuss what occurred and define the solutions.

$$\begin{cases} y = 2x + 1 \\ 4x - 2x = -2 \end{cases}$$

Student Application – Divide the class into pairs, and have the students complete the worksheet “Solving Systems of Linear Equations”, involving graphing systems of equations. Have the students work as partners, where each student graphs the first equation and they compare graphs and then exchange papers and graph the second equation on their partners’ paper. Then, the students will determine the correct solutions.

Embedded Assessment – Teacher assesses student learning through responses to verbal questions and visual observations of student work.

Reteaching/Extension –

- Give the students two lines cut out on construction paper. Have them show you intersecting, parallel, one solution, no solution, coinciding, and infinite lines.
- Assign “Let’s Meet at the Carnival” as a homework assignment.

Lesson 2

Pre-assessment – Project “Interception!”, and have the students complete it to review slope and intercepts. Allow students to give verbal responses. During the verbal response, have the students give a “Thumbs Up” if they agree with the answer, a “Thumbs Down” if they disagree. If they are not sure, they can place their thumb side ways.

Launch – Go over the answers to the drill, “Interception!,” with the students. Have the students graph problems 1 and 3 from the drill as a system of equations. Have the students identify the solution to the system. Follow up with having the students graph problems 2 and 4 as a system of equations and state the solution.

Teacher Facilitation – Have the students stand in two concentric circles, with the inside circle of students and the outside circle of students facing each other. Give each student a graph from the “Inside and Out” activity with the solution printed on the back. The students show the graph to the student in front of them, hiding the solution. The students must give the correct solution to the graph they are shown. Then, direct students to move around the circle so that the students in the inside circle move two places to the right. This cooperative learning activity is known as an inside/outside circle activity. Distribute copies of “Systems with Tables”, projecting a transparency of this same worksheet. Work through the first real world scenario involving a balloon race. Guide the students to set up a system of equations in order to solve the system using tables.

Student Application – Have the students complete “Systems with Tables,” problems 2 - 3 in pairs. Invite students to the board to share their solutions and their thinking.

Embedded Assessment – Teacher assesses student learning through visual observation of student performance in matching the systems to the real world scenario correctly.

Reteaching/Extension –

- Give the students several different systems of linear equations already in slope intercept form. Have them type the system into the graphing calculator. Using the table in the calculator, they can find where the y values are the same.
- Assign “Systems with Tables and Graphs” to the students for homework.

Lesson 3

Pre-assessment – As students enter the room, hand each student a different colored index card such that no more than four students have the same colored card. Go over homework and answer questions relating to homework. Then, instruct the students to find their team members that share the same

color index card and sit with them. (Due to the assessment that will be given there will be no written pre-assessment.)

Launch – Prior to the start of class, set up the “Gallery Walk.”

Hang the given problems around the room. Each group will thoroughly answer their question on the poster paper. Then, each group will rotate to each of the other posters and analyze the question and answer. Writing directly on the posters, the students will write positive notes to the answers that are correct, and provide suggestions if the answer is incorrect. After rotating through all the questions, each group will go back to their problem to read the comments and make any necessary corrections.

Teacher Facilitation – Since the Gallery Walk serves as a review for the quiz, teachers will help students as necessary as well as determine readiness for the quiz.

Student Application – After completing the gallery walk, the students will complete the quiz.

Embedded Assessment – Teacher assesses student learning through responses to verbal questions and visual observations of student work.

Reteaching/Extension – The next lesson will be solving systems of linear equations using substitution and elimination. If the student is unsuccessful in graphing the systems, then they may find one of these methods to be easier.

Summative Assessment:

Students will complete a quiz, “Graphing Linear Equations Assessment”.

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Drill: Carnies in the Curriculum!

1. Carnivals 'R' Fun has arrived in your neighborhood. It costs \$1.50 to enter the carnival and \$0.75 per ride. You have \$18 to spend.



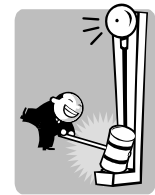
Define the variables

Let x =

Let y =

Write an equation to represent the situation

2. Your local fire station is holding a neighborhood carnival to raise money for a new fire engine. It costs \$2 to enter the carnival and \$0.50 per ride. You still have \$18 to spend.



Define the variables

Let x =

Let y =

Write an equation to represent the situation

Choose the carnival which would allow you the most rides for your money. Use mathematics to justify your answer. Use words, symbols, or both in your justification.

Drill: Carnies in the Curriculum! Answer Key

1. Carnivals 'R' Fun has arrived in your neighborhood. It costs \$1.50 to enter the carnival and \$0.75 per ride. You have \$18 to spend.



Define the variables

Let x = Number of rides

Let y = Total Cost

Write an equation to represent the situation

$$y = 0.75x + 1.50$$

2. Your local fire station is holding a neighborhood carnival to raise money for a new fire engine. It costs \$2 to enter the carnival and \$0.50 per ride. You still have \$18 to spend.



Define the variables

Let x = Number of Rides

Let y = Total Cost

Write an equation to represent the situation

$$y = 0.50x + 2$$

Choose the carnival which would allow you the most rides for your money. Use mathematics to justify your answer. Use words, symbols, or both in your justification.

The local fire station because it allows me to ride 32 rides and Carnivals 'R' Fun only allows me to ride 22 rides. Have students show their work for the explanation.

Solving Systems of Linear Equations

Name _____

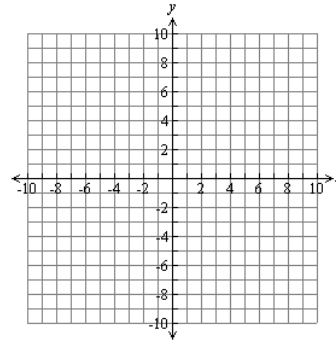
Graph each system of equations.

1.
$$\begin{cases} y = -\frac{1}{3}x - 2 \\ y = 2x + 5 \end{cases}$$

Check one:

- ☐ Intersecting Lines
☐ Coinciding Lines
☐ Parallel Lines

Solution: _____

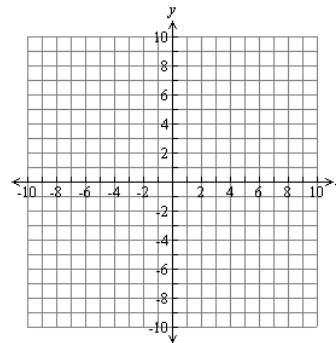


2.
$$\begin{cases} y = \frac{1}{4}x + 2.5 \\ y = \frac{1}{4}x - 0.5 \end{cases}$$

Check one:

- ☐ Intersecting Lines
☐ Coinciding Lines
☐ Parallel Lines

Solution: _____

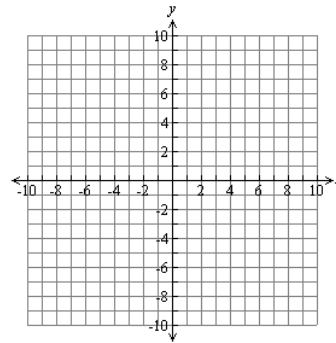


3.
$$\begin{cases} x - 2y = 2 \\ -2x + 4y = -4 \end{cases}$$

Check one:

- ☐ Intersecting Lines
☐ Coinciding Lines
☐ Parallel Lines

Solution: _____

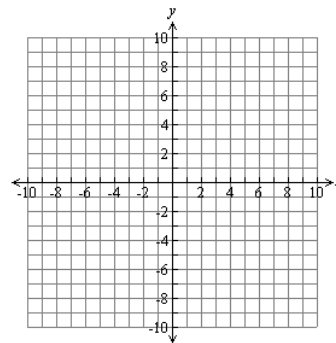


4.
$$\begin{cases} 3x + y = 5 \\ y = -\frac{1}{2}x \end{cases}$$

Check one:

- ☐ Intersecting Lines
☐ Coinciding Lines
☐ Parallel Lines

Solution: _____



Solving Systems of Linear Equations

Name__ANSWER KEY__

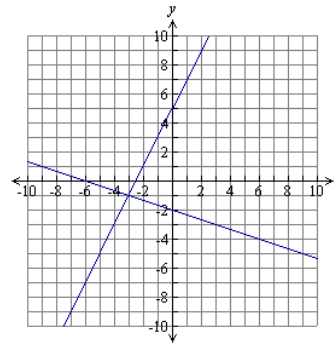
Graph each system of equations.

1.
$$\begin{cases} y = -\frac{1}{3}x - 2 \\ y = 2x + 5 \end{cases}$$

Check one:

- ☒ Intersecting Lines
☐ Coinciding Lines
☐ Parallel Lines

Solution: $(-3, -1)$

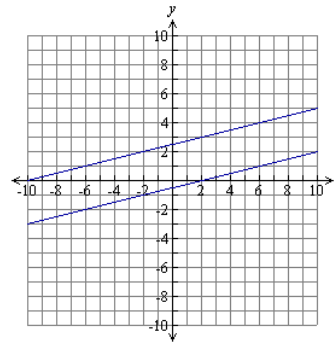


2.
$$\begin{cases} y = \frac{1}{4}x + 2.5 \\ y = \frac{1}{4}x - 0.5 \end{cases}$$

Check one:

- ☐ Intersecting Lines
☐ Coinciding Lines
☒ Parallel Lines

Solution: No Solution

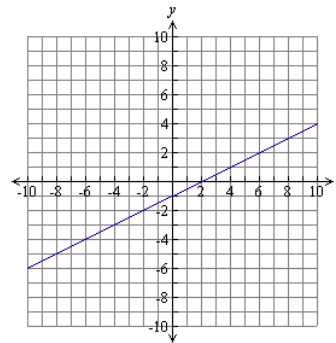


3.
$$\begin{cases} x - 2y = 2 \\ -2x + 4y = -4 \end{cases}$$

Check one:

- ☐ Intersecting Lines
☒ Coinciding Lines
☐ Parallel Lines

Solution: Infinitely Many Solutions

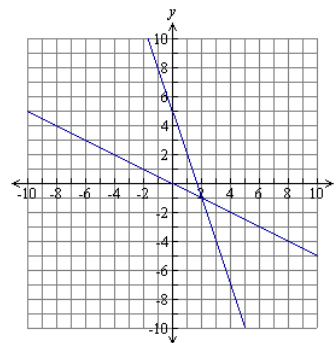


4.
$$\begin{cases} 3x + y = 5 \\ y = -\frac{1}{2}x \end{cases}$$

Check one:

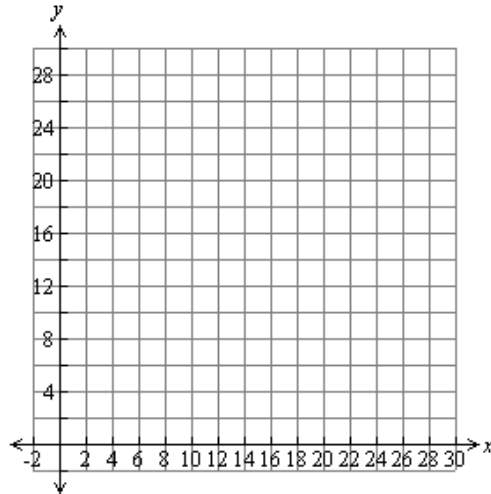
- ☒ Intersecting Lines
☐ Coinciding Lines
☐ Parallel Lines

Solution: $(2, -1)$



Solve each problem. Show your work.

1. Mary Lou and Nancy are driving to the carnival. Mary Lou's car is following the path $-x + 2y = 20$ and Nancy's car follows the path $x + 2y = 40$. Where will their paths meet?



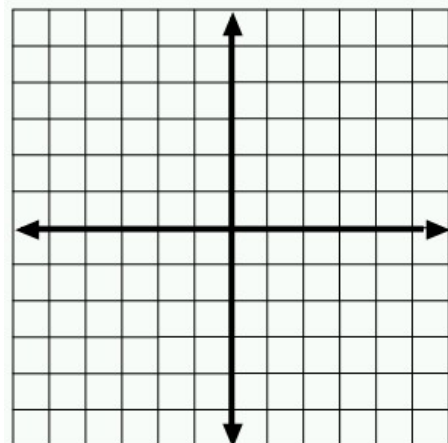
2. At the carnival, corn dogs are one price and cotton candy is another. Melissa buys 3 corn dogs and one cotton candy for \$2.70. Scott buys one corn dog and 4 cotton candies for \$1.20.

- Identify the variables.



- Write a system of equations that can used to determine the cost of the corn dogs and cotton candy.

- Determine the cost of each.

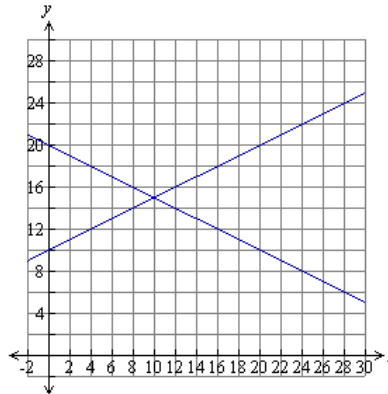


Let's Meet at the Carnival

Name: _____

Solve each problem. Show your work.

- Mary Lou and Nancy are driving to the carnival. Mary Lou's car is following the path $-x + 2y = 20$ and Nancy's car follows the path $x + 2y = 40$. Where will their paths meet?



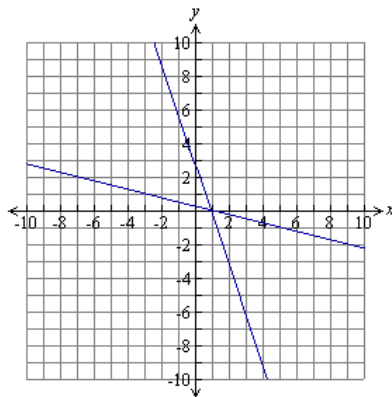
Nancy and Mary Lou meet at (10, 15).

- At the carnival, corn dogs are one price and cotton candy is another. Melissa buys 3 corn dogs and one cotton candy for \$2.70. Scott buys one corn dog and 4 cotton candies for \$1.20.

- Identify the variables.
 $x = \text{corndog}$ $y = \text{cotton candy}$
- Write a system of equations that can be used to determine the cost of the corn dogs and cotton candy.

$$\begin{cases} 3x + y = 2.70 \\ x + 4y = 1.20 \end{cases}$$

- Determine the cost of each.



Corndogs are \$0.75 and Cotton candy is \$0.10 which is where the two intersect on the graph.

Interception!
Drill

State the slope (m) and the y – intercept (b) for the following equations:

1. $y = -2x + 11$

2. $y = \frac{1}{3}x - 5$

State the x – intercept and the y – intercept for the following equations:

3. $2x - y = 5$

4. $4x + 3y = 6$



Interception!
Drill

ANSWER KEY

State the slope (m) and the y – intercept (b) for the following equations:

1. $y = -2x + 11$

$$m = -2, b = 11$$

2. $y = \frac{1}{3}x - 5$

$$m = \frac{1}{3}, b = -5$$

State the x – intercept and the y – intercept for the following equations:

3. $2x - y = 5$

$$\begin{aligned} x\text{-int.} &= \left(\frac{5}{2}, 0\right) \\ y\text{-int.} &= (0, 2) \end{aligned}$$

4. $4x + 3y = 6$

$$\begin{aligned} x\text{-int.} &= \left(\frac{3}{2}, 0\right) \\ y\text{-int.} &= (0, -2) \end{aligned}$$



Graphing Lines Foldable
Outside of foldable

Back	Fold	Front
		How to graph using slope-intercept form
		How to graph using a table
		How to graph using the x – and y – intercepts

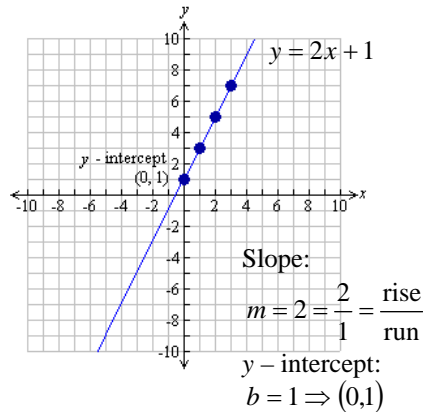
Graphing Lines Foldable

Inside of foldable

Examples for each flap

Fold

Explanation of each



Slope-intercept form: $y = mx + b$, where m represents the slope and b represents the y -intercept. Begin at the y -intercept, which is the point located on the y -axis and use the slope, rise over run, to locate the next three points. Draw your line through the points.

$$x + 2y = 10$$

x	y
0	5
2	4
4	3
6	2

Using a Table: Pick any values for x . Then substitute the values into the equation for x and solve for y . Plot the points from the table. Then, draw the line.

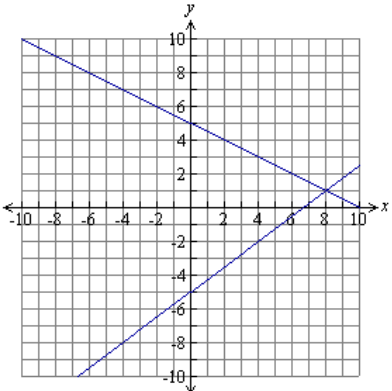
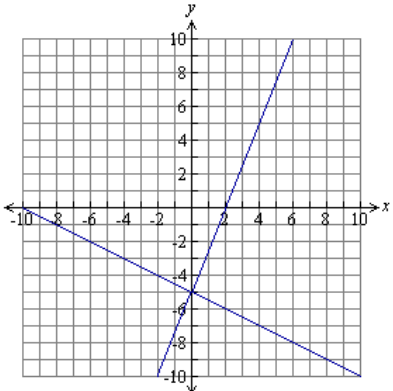
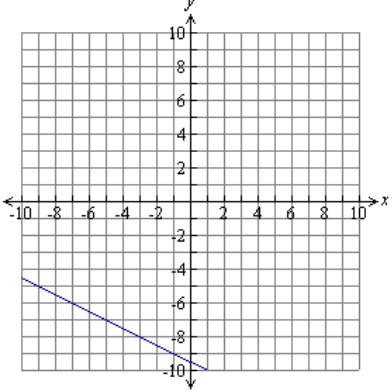
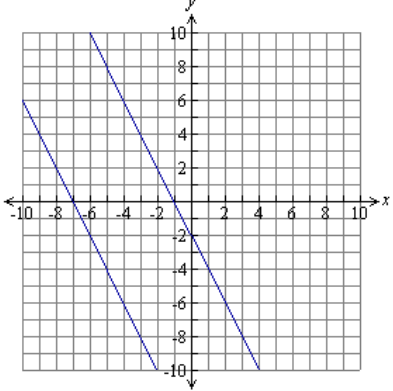
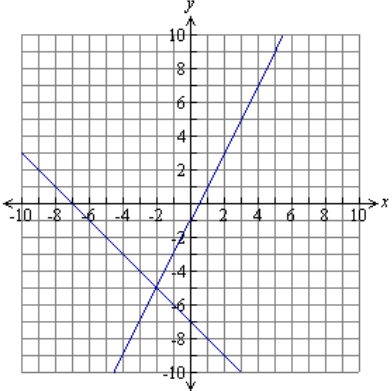
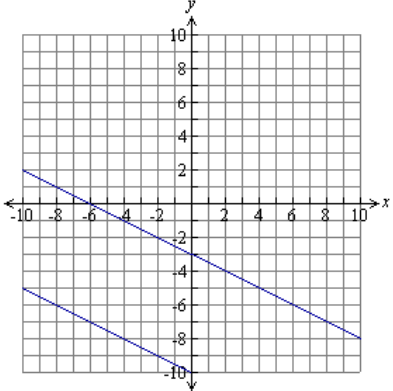
$$2x + 3y = 12$$

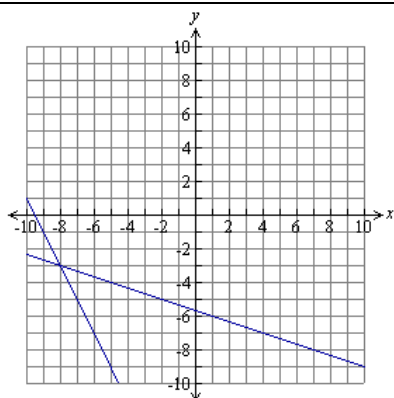
When $x = 0$, $2(0) + 3y = 12$ $3y = 12$ $y = 4$ $(0, 4)$	When $y = 0$, $2x + 3(0) = 12$ $2x = 12$ $x = 6$ $(6, 0)$
----------------------------------------------------------------------------	----------------------------------------------------------------------------

Using intercepts:
Let $x = 0$ then solve for y
Let $y = 0$ then solve for x

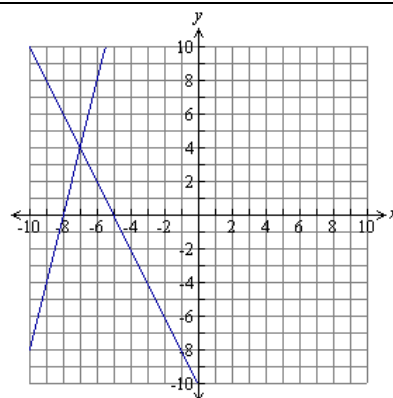
Graph the two ordered pairs.

Inside and Out Activity

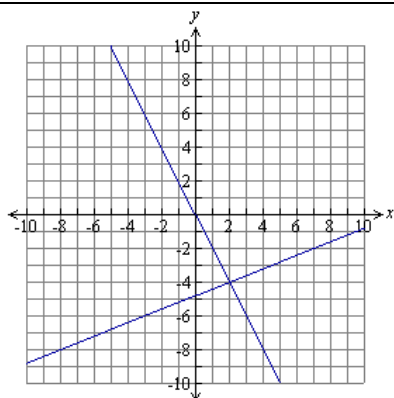
	
<p>Solution: $(8, 1)$</p>	<p>Solution: $(0, -5)$</p>
	
<p>Solution: Infinite</p>	<p>No Solution</p>
	
<p>Solution: $(-2, -5)$</p>	<p>No Solution</p>



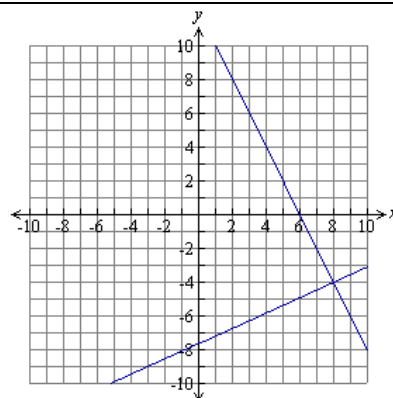
Solution: $(-8, -3)$



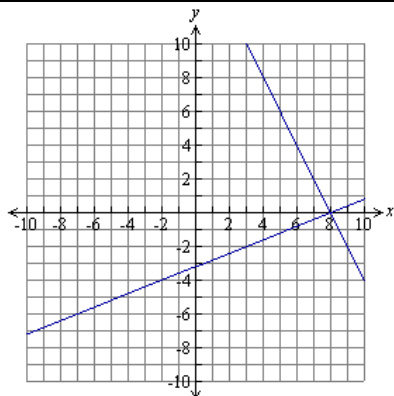
Solution: $(-7, 4)$



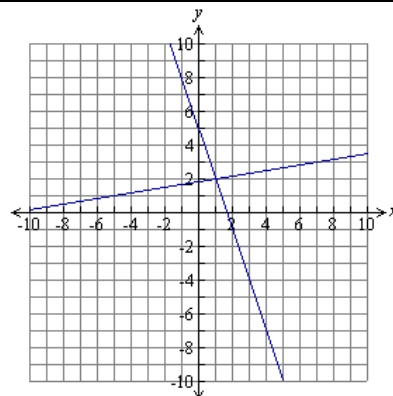
Solution: $(2, -4)$



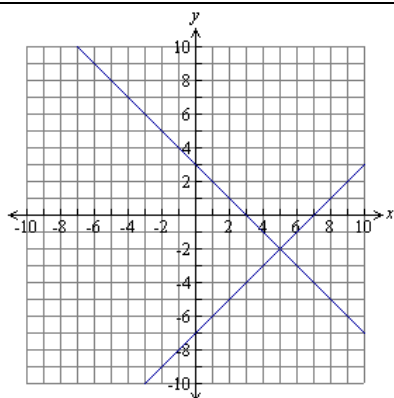
Solution: $(8, -4)$



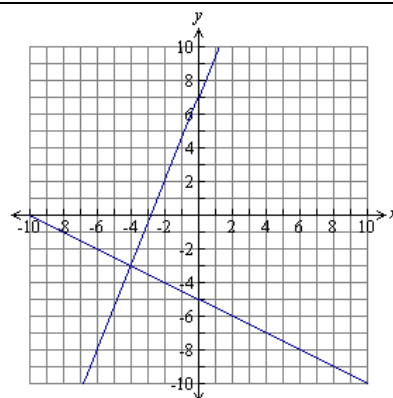
Solution: $(8, 0)$



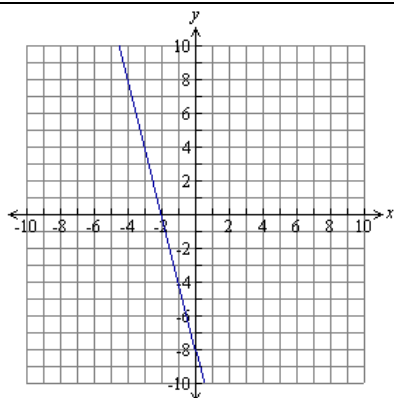
Solution: $(1, 2)$



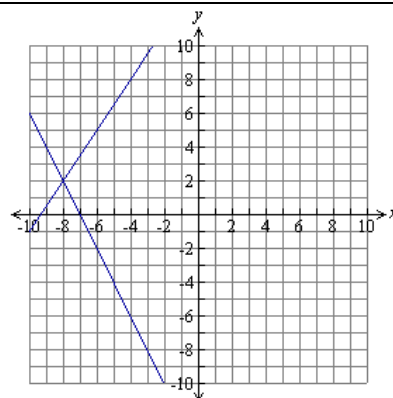
Solution: $(5, -2)$



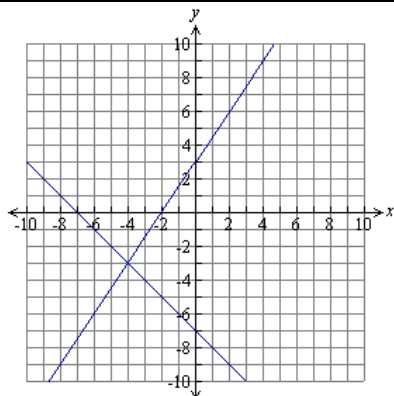
Solution: $(-4, -3)$



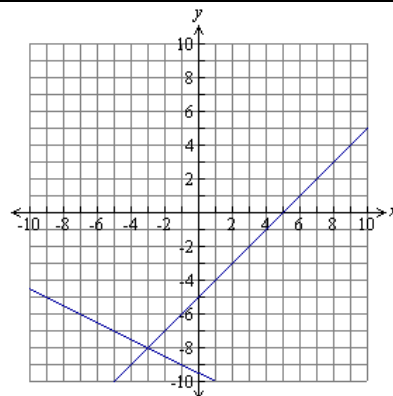
Solution: Infinite



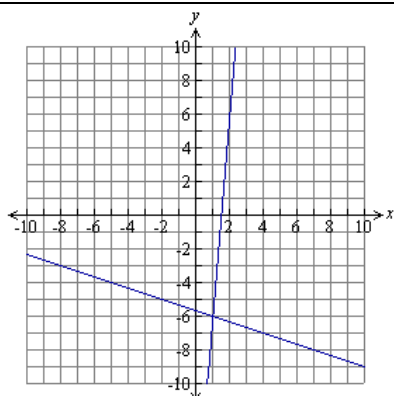
Solution: $(-8, 2)$



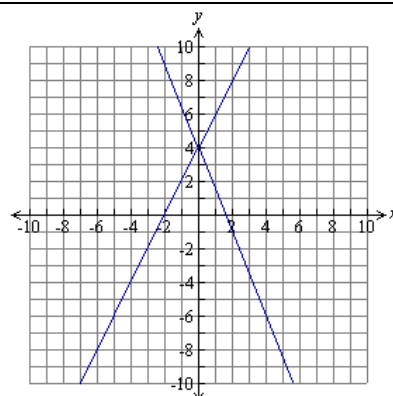
Solution: $(-4, -3)$



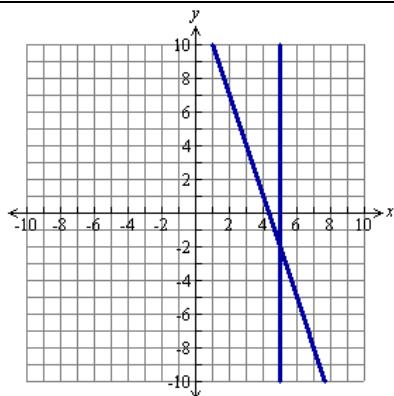
Solution: $(-3, -8)$



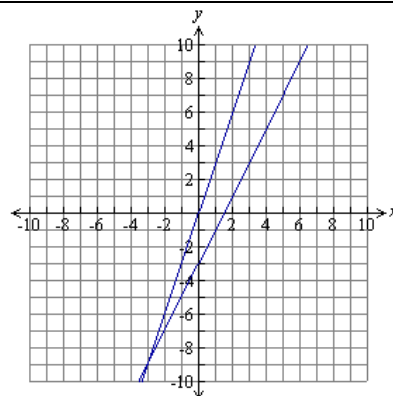
Solution: $(1, -6)$



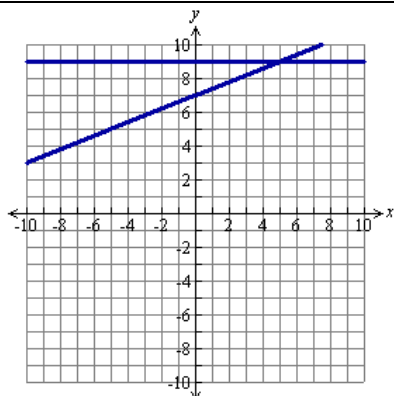
Solution: $(0, 4)$



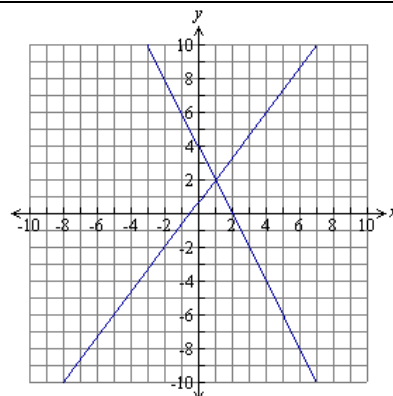
Solution: $(5, -2)$



Solution: $(-3, -9)$



Solution: $(5, 9)$



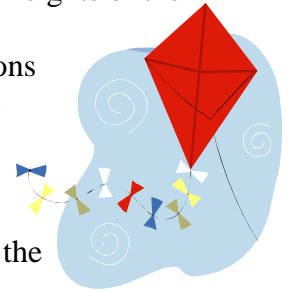
Solution: $(1, 2)$

Systems with Tables

1. Ken and Randy are flying kites. Ken's kite is 20 meters above the ground and rising 25 meters per minute. Randy's kite is 5 meters above the ground and rising 30 meters per minute.

Time in Minutes	Height of Ken's Kite	Height of Randy's Kite
0		
1		
2		
3		
4		
5		
6		

- Make a table to show the heights of the kites.
- Write a system of equations to represent the situation.



- When will the heights of the kites be the same?

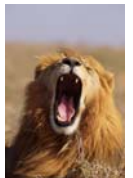
2. Tom and Rachael both want to buy a iPod. Tom has already saved \$25 and plans to save \$5 per week until she has enough to buy an iPod. Rachael has \$16 and plans to save \$8 per week.

Weeks	Amount Tom Saved	Amount Rachael Saved
0		
1		
2		
3		
4		



- Make a table to show the amount each has saved after each week.
- Write a system of equations to represent the situation.
- In how many weeks will Tom and Rachael have saved the same amount of money?
- How much will they have saved?

3. Tami is at the zoo. A gazelle jumped the fence and is now in the lion's den. Tami sees a lion 35 feet behind gazelle. If the gazelle starts running, it can go 37 feet per second. Tami thinks that lions can run 44 feet per second. The gazelle is 200 feet from the fence.



- Make a table to represent the distance each animal is away from the fence for each second they run.

Time in Seconds	Aaron's distance from fence	Bull's distance from fence
0	200 ft	235 ft
1	163 ft	191 ft
2		
3		
4		
5		

6		
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Write a system of equations to represent the situation.

Answer Key

Systems with Tables

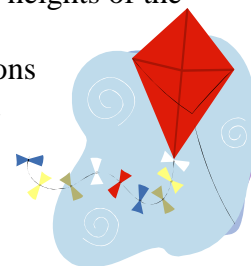
- Will the lion catch the gazelle before it reaches the fence?

1. Ken and Randy are flying kites. Ken's kite is 20 meters above the ground and rising 25 meters per minute. Randy's kite is 5 meters above the ground and rising 30 meters per minute.

Time in Minutes	Height of Ken's Kite	Height of Randy's Kite
0	20	5
1	45	35
2	70	65
3	95	95
4	120	125
5	145	155
6	170	185

- Make a table to show the heights of the kites.
- Write a system of equations to represent the situation.

$$\begin{cases} y = 25x + 20 \\ y = 30x + 5 \end{cases}$$



- When will the heights of the kites be the same? After 3 minutes

2. Tom and Rachael both want to buy a iPod. Tom has already saved \$25 and plans to save \$5 per week until she has enough to buy an iPod. Rachael has \$16 and plans to save \$8 per week.

- Make a table to show the amount each has saved after each week.

Weeks	Amount Tom Saved	Amount Rachael Saved
0	25	16
1	30	24
2	35	32
3	40	40
4	45	48



- Write a system of equations to represent the situation. $\begin{cases} y = 25 + 5x \\ y = 16 + 8x \end{cases}$

- In how many weeks will Tom and Rachael have saved the same amount of money? In 3 weeks
- How much will they have saved? They will have \$40.

3. Tami is at the zoo. A gazelle jumped the fence and is now in the lion's den. Tami sees a lion 35 feet behind gazelle. If the gazelle starts running, it can go 37 feet per second. Tami thinks that lions can run 44 feet per second. The gazelle is 200 feet from the fence.

- Make a table to represent the distance each animal is away from the fence for each second they run.

Time in Seconds	Gazelle's distance from fence	Lion's distance from fence
-----------------	-------------------------------	----------------------------



0	200 ft	235 ft
1	163 ft	191 ft
2	126 ft	147 ft
3	89 ft	103 ft
4	52 ft	59 ft
5	15 ft	15 ft
6	-22 ft	-29 ft

Write a system of equations to represent the situation.

$$\begin{cases} y = 5x + 25 \\ y = 8x + 16 \end{cases}$$

- Will the lion catch the gazelle before it reaches the fence? YES

Systems with Tables and Graphs Homework

Name _____

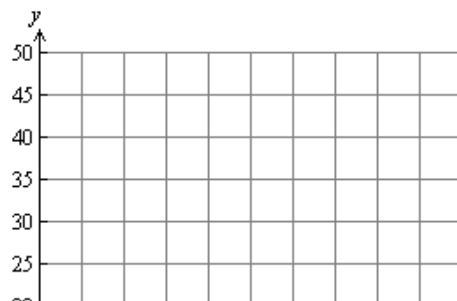
1. Michael graphed the system below. Describe what makes the solution to this system a special case.

$$\begin{cases} y = \frac{1}{2}x + 3 \\ y = \frac{1}{2}x - 4 \end{cases}$$

2. Nicole's two grandparents send money each year on her birthday. Nicole puts the money into a savings account in the bank. Pop-Pop sent \$25 on her first birthday and \$5 every birthday after that. Grandma Rose gave Nicole \$10 each birthday.

- Determine the system of linear equations.
- When will Nicole receive the same amount of money from both grandparents? How much will it be?

Do These Systems Meet Your Expectations?



Years	Pop Pop's Total	Grandma Rose's Total
1		
2		
3		
4		
5		

Systems with Tables and Graphs

Name ____ Answer key ____
Homework

- Michael graphed the system below. Describe what makes the solution to this system a special case.

$$\begin{cases} y = \frac{1}{2}x + 3 \\ y = \frac{1}{2}x - 4 \end{cases}$$

This is a special case because the equations have the same slope which means they are parallel lines and will have no solutions.

- Nicole's two grandparents send money each year on her birthday. Nicole puts the money into a savings account in the bank. Pop-Pop sent \$25 on her first birthday and \$5 every birthday after that. Grandma Rose gave Nicole \$10 each birthday.

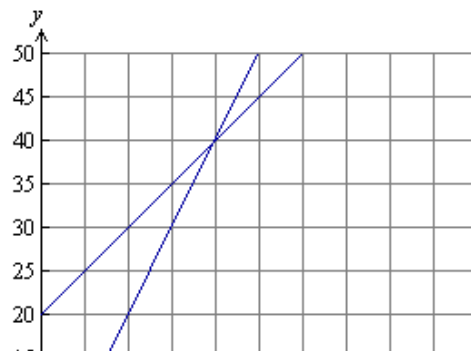
- Determine the system of linear equations.

$$\begin{cases} y = 5x + 20 \\ y = 10x \end{cases}$$

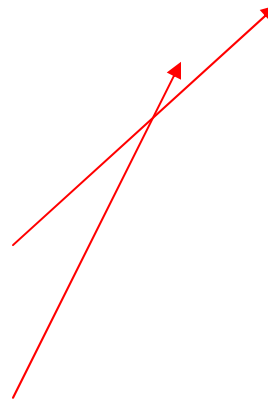
- When will Nicole receive the same amount of money from both grandparents? How much will it be? After 4 years they each will have given her \$40.

Years	Pop Pop's	Grandma
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Do These Systems Meet Your Expectations?



	Total	Rose's Total
0	20	0
1	25	10
2	30	20
3	35	30
4	40	40



Gallery Walk

Problem One

Decide which of the ordered pairs is the solution to the system.

$$\begin{cases} 4x - 5y = 0 \\ 6x - 5y = 10 \end{cases}$$

A. (5, 4)

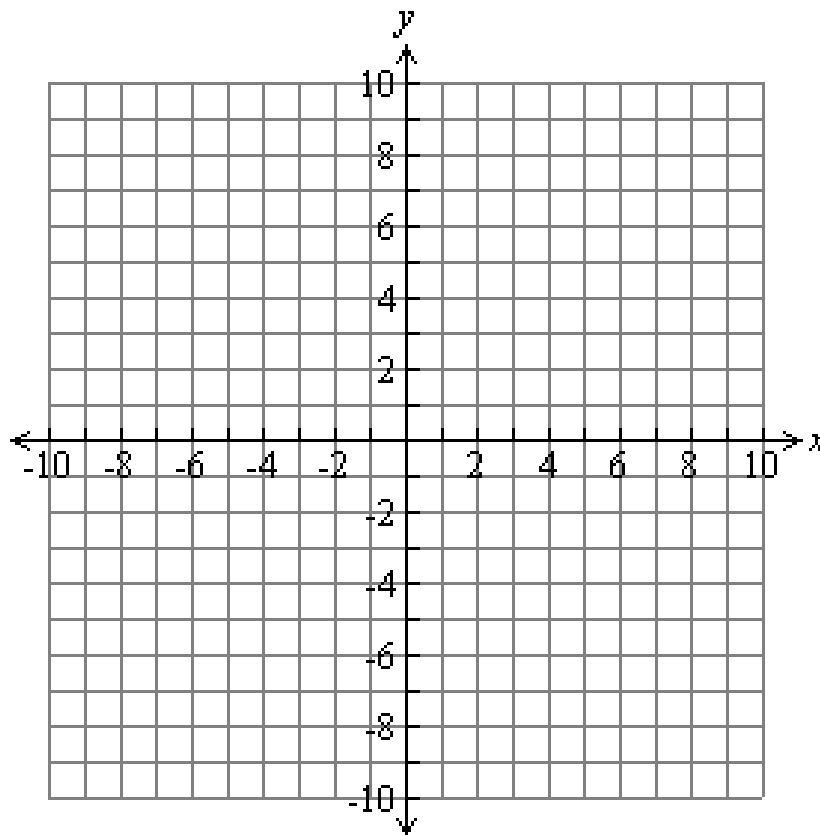
B. (10, 8)

Use mathematics to justify your answer. Use words, symbols, or both in your justification.

Problem Two

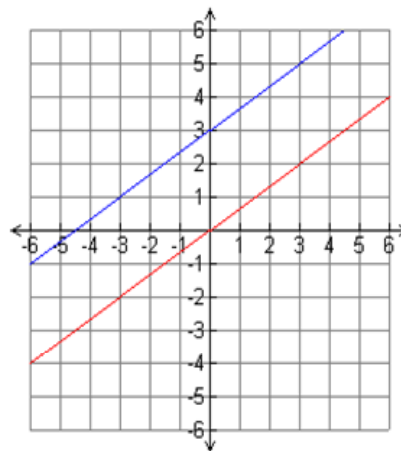
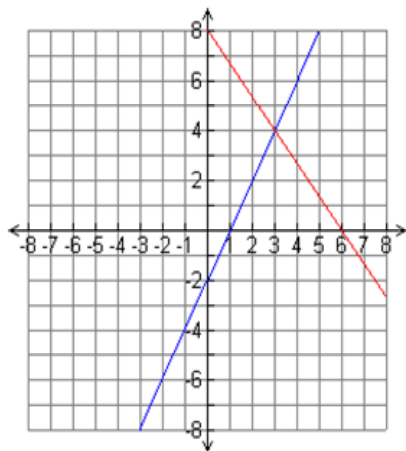
Graph the system of equations. Identify the solution.

$$\begin{cases} y = 2x - 4 \\ y = -\frac{1}{2}x + 1 \end{cases}$$



Problem Three

- Identify the solution in each system of equations graphed.
- Identify the type of system of equations represented.



- What type of system is missing?
Imagine that you are teaching a 6th grade student about this type of line. Using words, explain this special situation in detail. Remember to include the name and what it means as well as how you would determine the solution.

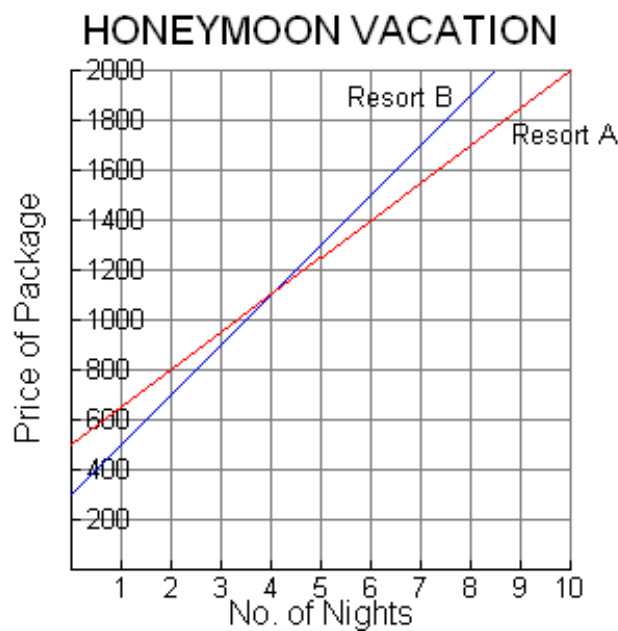
Problem Four

- Define the vocabulary word:
intercept.
- State the x and y intercepts for each equation in the system of equations below.

$$\begin{cases} 3x + 2y = 4 \\ -x + 3y = -5 \end{cases}$$

Problem Five

Holly is researching Honeymoon packages. The graph below shows the price of a honeymoon at two different resorts depending on the number of nights that she wants to stay.



- For how many nights can Holly stay at either resort and the cost will be the same?
- What is the cost?
- Which resort costs more for 8 nights? What is the cost? Use words, symbols or both to explain your answer.

Problem Six

Heather is considering two job offers in department stores. The salary at Nordstrom is \$400 per week plus 10% commission on her sales. At Hollister, the salary is \$375 per week plus 15% commission.

- Write an equation representing Heather's weekly sales, x , and her weekly salary, y at Nordstrom.
- Write an equation representing Heather's weekly sales, x , and her weekly salary, y at Hollister.
- Use a table to determine what amount of sales would produce the same weekly salary at both stores.

Amount Sold	Salary at Nordstrom	Salary at Hollister
0	400	375
100	410	
200		
300		
400		
500		

Gallery Walk

ANSWER KEY

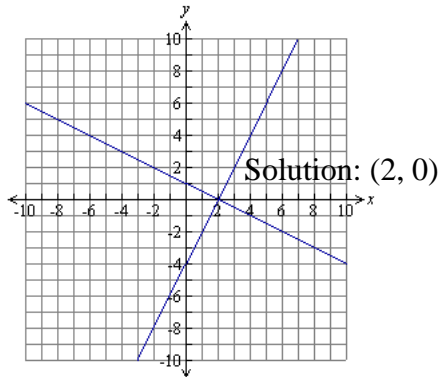
Problem #1

A. $4(5) - 5(4) = 0$
 $6(5) - 5(4) = 10$

A is the solution.

B. $4(10) - 5(8) = 0$
 $6(10) - 5(8) = 10$

Problem #2



Problem #3

- a. (3, 4) intersecting
- b. No solution: Parallel

Coinciding lines are missing. It has infinite solutions; one line is directly over the other.

Problem #4

Intercepts are the points where lines cross the axes.

(0, 2) and (4/3, 0)

(0, -5/3) and (5, 0)

Problem #5

4 nights

\$1100

Resort B costs \$1900 and Resort A costs \$1700 so Resort b costs more.

Problem #6

Nordstrom: $y = 400 + 0.10x$

Hollister: $y = 375 + 0.15x$

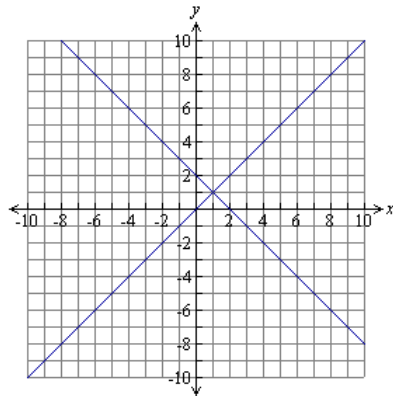
They need to sell \$500 of merchandise to make the same salary.

Amount Sold	Salary at Nordstrom	Salary at Hollister
0	400	375
100	410	390
200	420	405
300	430	420
400	440	435
500	450	450

Graphing Linear Equations Assessment

Name: _____

1. Given the following graph, state the solution.



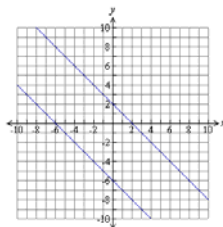
2. Tony graphed the system of equations
$$\begin{cases} y = \frac{2}{3}x + 3 \\ y = \frac{2}{3}x - 7 \end{cases}$$

Which of these best describes the solution?

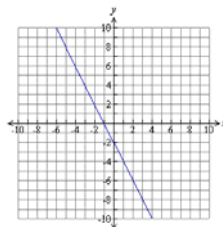
- A. The lines have no points in common.
- B. The lines have one point in common.
- C. The lines have two points in common.
- D. The lines have an infinite number of points in common.

3. Which graph represents the following system
$$\begin{cases} x + y = -2 \\ -2x - 2y = 4 \end{cases} ?$$

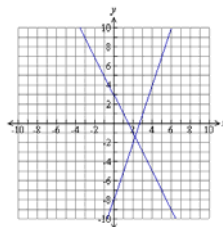
A.



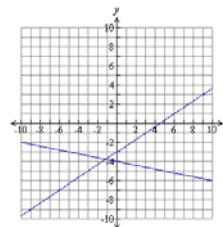
B.



C.

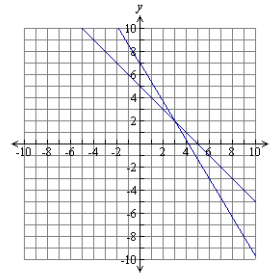


D.



4. At Carnivals 'R' Us, 2 sodas and 2 hamburgers cost \$10.00. At Firehouse Carnival, 5 hamburgers and 3 sodas cost \$21. For what number of hamburgers and sodas will the cost be the same at both carnivals?

- A. (1.50, 2.5)
- B. (3, 2)
- C. (2.50, 1.50)
- D. (2, 3)

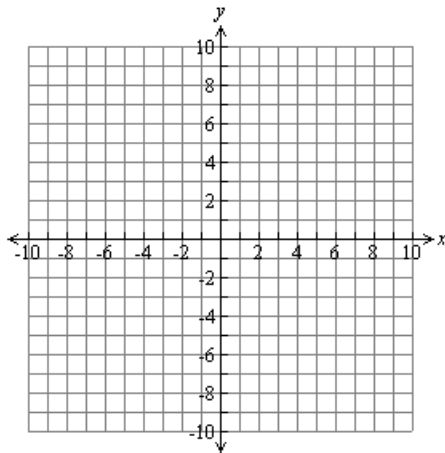


5. Find the x -intercept of the line: $2x - 3y = 6$.

6. Is the ordered pair $(2, -1)$ the solution of the system $\begin{cases} y = 2x + 7 \\ y = -3x - 3 \end{cases}$?

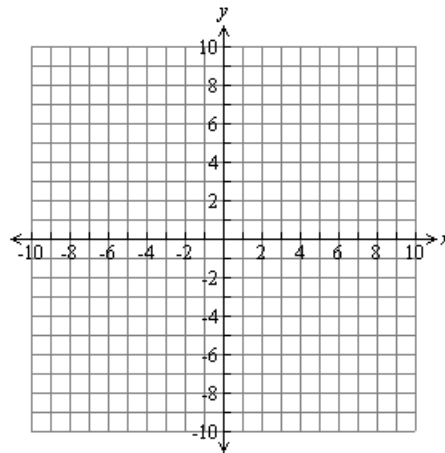
Solve each system of equations by graphing:

7. $\begin{cases} y = x + 6 \\ y = -2x \end{cases}$



Solution: _____

8. $\begin{cases} x - y = -2 \\ -3x + 3y = 6 \end{cases}$

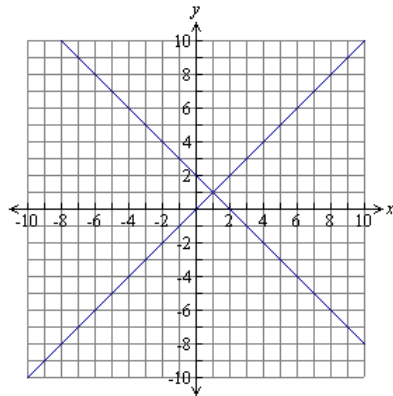


Solution: _____

Graphing Linear Equations Assessment

Name: ANSWER KEY

1. Given the following graph, state the solution.



(1, 1)

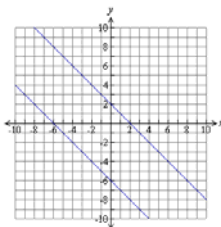
2. Tony graphed the system of equations
$$\begin{cases} y = \frac{2}{3}x + 3 \\ y = \frac{2}{3}x - 7 \end{cases}$$

Which of these best describes the solution?

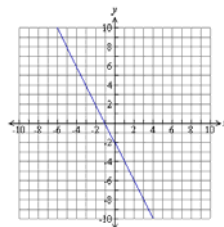
- A. **The lines have no points in common.**
- B. The lines have one point in common.
- C. The lines have two points in common.
- D. The lines have an infinite number of points in common.

3. Which graph represents the following system
$$\begin{cases} x + y = -2 \\ -2x - 2y = 4 \end{cases} ?$$

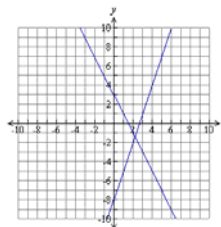
A.



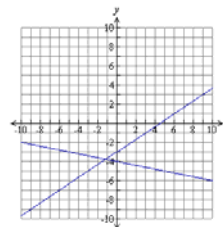
B.



C.

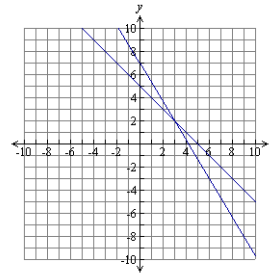


D.



4. At Carnivals 'R' Us, 2 sodas and 2 hamburgers cost \$10.00. At Firehouse Carnival, 5 hamburgers and 3 sodas cost \$21. For what number of hamburgers and sodas will the cost be the same at both carnivals?

- A. (1.50, 2.5)
- B. **(3, 2)**
- C. (2.50, 1.50)
- D. (2, 3)



5. Find the x -intercept of the line: $2x - 3y = 6$.

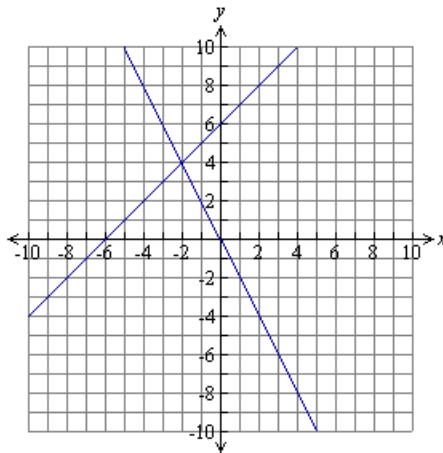
(3, 0)

6. Is the ordered pair $(2, -1)$ the solution of the system $\begin{cases} y = 2x + 7 \\ y = -3x - 3 \end{cases}$?

NO

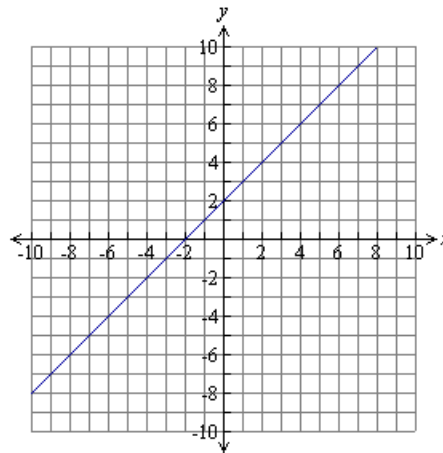
Solve each system of equations by graphing:

7. $\begin{cases} y = x + 6 \\ y = -2x \end{cases}$



Solution: **(-3, 2)**

8. $\begin{cases} x - y = -2 \\ -3x + 3y = 6 \end{cases}$



Solution: **Infinitely many solutions**